SEQUENCE LISTING

<110> Barnett, Susan
Zur Megede, Jan

<120> POLYNUCLEOTIDES ENCODING ANTIGENIC HIV TYPE C POLYPEPTIDES, POLYPEPTIDES AND USES THEREOF

<130> 1631.002

<140>
<141>

<150> 60/152,195
<151> 1999-09-01

<160> 29

<170> PatentIn Ver. 2.0

<210> 1
<211> 60
<212> DNA
<213> Human immunodeficiency virus

<400> 1
gacatcaagc agggccccaa ggagcccttc cgcgactacg tggaccgctt cttcaagacc 60

<210> 2
<211> 60
<212> DNA
<213> Human immunodeficiency virus

<400> 2
gacatccgcc agggccccaa ggagcccttc cgcgactacg tggaccgctt cttcaagacc 60

<210> 3
<211> 1479
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic Gag of HIV strain AF110965

<400> 3
atgggcgccc gcgccagcat cctgcgcggc ggcaagctgg acgcctggga gcgcatccgc 60
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ctggagaagt tcgccctgaa ccccggcctg ctggagacca gcgagggctg caagcagatc 180
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gccttcagcc ccgaggtgat ccccatgttc accgccctga gcgagggcgc cacccccag 540
gacctgaaca cgatgttgaa caccgtgggc ggccaccagg ccgccatgca gatgctgaag 600
gacaccatca acgaggaggc cgccgagtgg gaccgcgtgc accccgtgca cgccggcccc 660
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ctgcaggagc agatcgcctg gatgaccagc aacccccca tccccgtggg cgacatctac 780
aagcggtgga tcatcctggg cctgaacaag atcgtgcgga tgtacagccc cgtgagcatc 840
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ttcgaggaga ccacccccgg ccagaagcag gagagcaagg accgcgagac cctgaccagc 1440
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<210> 4
<211> 1509
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic Gag
of HIV strain AF110967

<400> 4
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ctgcgccccg gcggcaagaa gcactacatg ctgaagcacc tggtgtgggc agccgcgag 120
ctggagggct tcgccctgaa ccccggcctg ctggagaccg ccgagggctg caagcagatc 180
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ctggacaaga tcgaggagga gcagaacaag tcccagcaga agacccagca ggccaaggag 360
gccgacggca aggtgagcca gaactacccc atcgtgcaga acctgcaggg ccagatggtg 420
caccaggcca tcagcccccg caccctgaac gcctgggtga aggtgatcga ggagaaggcc 480
ttcagccccg aggtgatccc catgttcacc gccctgagcg agggcgccac cccccaggac 540
ctgaacacga tgttgaacac cgtgggcggc caccaggccg ccatgcagat gctgaaggac 600
accatcaacg aggaggccgc cgagtgggac cgcctgcacc ccgtgcaggc cggccccgtg 660
gcccccggcc agatgcgcga cccccgcggc agcgacatcg ccggcgccac cagcaccctg 720
caggagcaga tcgcctggat gaccagcaac cccccgtgc ccgtgggcga catctacaag 780
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gacatccgcc agggccccaa ggagcccttc cgcgactacg tggaccgctt cttcaagacc 900
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cagaacgcca accccgactg caagaccatc ctgcgcgctc tcggccccgg cgccaccctg 1020
gaggagatga tgaccgcctg ccagggcgtg ggcggccccg gccacaaggc ccgcgtgctg 1080
gccgaggcga tgagccaggc caacagcgtg aacatcatga tgcagaagag caacttcaag 1140
ggcccccggc gcaacgtcaa gtgcttcaac tgcggcaagg agggccacat cgccaagaac 1200
tgccgcgccc cccgcaagaa gggctgctgg aagtgcggca aggagggcca ccagatgaag 1260
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cccggcaact tcctgcagaa ccgcagcgag cccgccgccc ccaccgtgcc caccgccccc 1380
cccgccgaga gcttccgctt cgaggagacc acccccgccc ccaagcagga gcccaaggac 1440
cgcgagccct accgcgagcc cctgaccgcc ctgcgcagcc tgttcggcag cggccccctg 1500
agccagtaa 1509

<210> 5
<211> 141
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Env common
region of HIV strain AF110968

<400> 5
accatcacca tcacctgccg catcaagcag atcatcaaca tgtggcagaa ggtgggccgc 60
gccatgtacg ccccccccat cgccggcaac ctgacctgcg agagcaacat caccggcctg 120
ctgctgaccc gcgacggcgg c 141

<210> 6
<211> 1431
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
gp120 coding region of HIV strain AF110968

<400> 6
agcgtggtgg gcaacctgtg ggtgaccgtg tactacggcg tgcccgtgtg gaaggaggcc 60
aagaccaccc tgttctgcac cagcgacgcc aaggcctacg agaccgaggt gcacaacgtg 120
tgggccaccc acgcctgcgt gcccaccgac cccaaccccc aggagatcgt gctggagaac 180
gtgaccgaga acttcaacat gtggaagaac gacatggtgg accagatgca cgaggacatc 240
atcagcctgt gggaccagag cctgaagccc tgcgtgaagc tgaccccctc gtgcgtgacc 300
ctgaagtgcc gcaacgtgaa cgccaccaac aacatcaaca gcatgatcga caacagcaac 360
aagggcgaga tgaagaactg cagcttcaac gtgaccaccg agctgcgcga ccgcaagcag 420
gaggtgcacg ccctgttcta ccgcctggac gtggtgcccc tgcagggcaa caacagcaac 480
gagtaccgcc tgatcaactg caacaccagc gccatcaccc aggcctgccc caaggtgagc 540
ttcgacccca tccccatcca ctactgcacc cccgccggct acgccatcct gaagtgcaac 600
aaccagacct tcaacggcac cggcccctgc aacaacgtga gcagcgtgca gtgcgcccac 660
ggcatcaagc ccgtggtgag cacccagctg ctgctgaacg gcagcctggc caagggcgag 720
atcatcatcc gcagcgagaa cctggccaac aacgccaaga tcatcatcgt gcagctgaac 780
aagcccgtga agatcgtgtg cgtgcgcccc aacaacaaca cccgcaagag cgtgcgcatc 840
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tgcatcatca acaagaccga gtggaacagc accctgcagg gcgtgagcaa gaagctggag 960
gagcacttca gcaagaaggc catcaagttc gagcccagca gcggcggcga cctggagatc 1020
accacccaca gcttcaactg ccgcggcgag ttcttctact gcgacaccag ccagctgttc 1080
aacagcacct acagccccag cttcaacggc accgagaaca agctgaacgg caccatcacc 1140
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gccccccca tcgccggcaa cctgacctgc gagagcaaca tcaccggcct gctgctgacc 1260
cgcgacggcg gcaagaccgg ccccaacgac accgagatct tccgcccccgg cggcggcgac 1320
atgcgcgaca actggcgcaa cgagctgtac aagtacaagg tggtggagat caagcccctg 1380
ggcgtggccc ccaccgaggc caagcgccgc gtggtggagc gcgagaagcg c 1431

<210> 7
<211> 1944
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
gp140 coding region of HIV strain AF110968

<400> 7
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aagaccaccc tgttctgcac cagcgacgcc aaggcctacg agaccgaggt gcacaacgtg 120
tgggccaccc acgcctgcgt gcccaccgac cccaaccccc aggagatcgt gctggagaac 180
gtgaccgaga acttcaacat gtggaagaac gacatggtgg accagatgca cgaggacatc 240
atcagcctgt gggaccagag cctgaagccc tgcgtgaagc tgacccccct gtgcgtgacc 300
ctgaagtgcc gcaacgtgaa cgccaccaac aacatcaaca gcatgatcga caacagcaac 360
aagggcgaga tgaagaactg cagcttcaac gtgaccaccg agctgcgcga ccgcaagcag 420
gaggtgcacg ccctgttcta ccgcctggac gtggtgcccc tgcagggcaa caacagcaac 480
gagtaccgcc tgatcaactg caacaccagc gccatcaccc aggcctgccc caaggtgagc 540
ttcgacccca tccccatcca ctactgcacc cccgccggct acgccatcct gaagtgcaac 600
aaccagacct tcaacggcac cggcccctgc aacaacgtga gcagcgtgca gtgcgcccac 660
ggcatcaagc ccgtggtgag cacccagctg ctgctgaacg gcagcctggc caagggcgag 720
atcatcatcc gcagcgagaa cctggccaac aacgccaaga tcatcatcgt gcagctgaac 780
aagcccgtga agatcgtgtg cgtgcgcccc aacaacaaca cccgcaagag cgtgcgcatc 840
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tgcatcatca acaagaccga gtggaacagc accctgcagg gcgtgagcaa gaagctggag 960
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aacagcacct acagccccag cttcaacggc accgagaaca agctgaacgg caccatcacc 1140
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gccccccca tcgccggcaa cctgacctgc gagagcaaca tcaccggcct gctgctgacc 1260
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atcaccctga ccgtgcaggc ccgcctgctg ctgagcggca tcgtgcagca gcagaacaac 1560
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agcaaccgca gccacgacga gatctgggac aacatgacct ggatgcagtg ggaccgcgag 1800
atcaacaact acaccgacac catctaccgc ctgctggagg agagccagaa ccagcaggag 1860
aagaacgaga aggacctgct ggccctggac agctggcaga acctgtggaa ctggttcagc 1920
atcaccaact ggctgtggta catc 1944

<210> 8
<211> 2466
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
gp160 coding region of HIV strain AF110968

<400> 8
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aagaccaccc tgttctgcac cagcgacgcc aaggcctacg agaccgaggt gcacaacgtg 120
tgggccaccc acgcctgcgt gcccaccgac cccaaccccc aggagatcgt gctggagaac 180
gtgaccgaga acttcaacat gtggaagaac gacatggtgg accagatgca cgaggacatc 240
atcagcctgt gggaccagag cctgaagccc tgcgtgaagc tgacccccct gtgcgtgacc 300

ctgaagtgcc gcaacgtgaa cgccaccaac aacatcaaca gcatgatcga caacagcaac 360
aagggcgaga tgaagaactg cagcttcaac gtgaccaccg agctgcgcga ccgcaagcag 420
gaggtgcacg ccctgttcta ccgcctggac gtggtgcccc tgcagggcaa caacagcaac 480
gagtaccgcc tgatcaactg caacaccagc gccatcaccc aggcctgccc caaggtgagc 540
ttcgacccca tccccatcca ctactgcacc cccgccggct acgccatcct gaagtgcaac 600
aaccagacct tcaacggcac cggcccctgc aacaacgtga gcagcgtgca gtgcgcccac 660
ggcatcaagc ccgtggtgag cacccagctg ctgctgaacg gcagcctggc caagggcgag 720
atcatcatcc gcagcgagaa cctggccaac aacgccaaga tcatcatcgt gcagctgaac 780
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gagcacttca gcaagaaggc catcaagttc gagcccagca gcggcggcga cctggagatc 1020
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ctggacacca tcgccatcgc cgtggccgag ggcaccgacc gcatcatcga gttcatccag 2400
cgcatctgcc gcgccatccg caacatcccc cgccgcatcc gccagggctt cgaggccgcc 2460
ctgcag 2466

<210> 9
<211> 2547
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
signal sequence and gp160 coding region of HIV
strain AF110968

<400> 9
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ttctggatgc tgatcatcag cagcgtggtg ggcaacctgt gggtgaccgt gtactacggc 120
gtgcccgtgt ggaaggaggc caagaccacc ctgttctgca ccagcgacgc caaggcctac 180
gagaccgagg tgcacaacgt gtgggccacc cacgcctgcg tgcccaccga ccccaacccc 240
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gaccagatgc acgaggacat catcagcctg tgggaccaga gcctgaagcc ctgcgtgaag 360
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agcatgatcg acaacagcaa caagggcgag atgaagaact gcagcttcaa cgtgaccacc 480
gagctgcgcg accgcaagca ggaggtgcac gccctgttct accgcctgga cgtggtgccc 540
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cgcgagaagc gcgccgtggg catcggcgcc gtgttcctgg gcttcctggg cgccgccggc 1560
agcaccatgg gcgccgccag catcaccctg accgtgcagg cccgcctgct gctgagcggc 1620
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taccaccgcc tgcgcgactt catcctgatc gccgcccgcg tgctggagct gctgggccag 2340
cgcggctggg aggccctgaa gtacctgggc agcctggtgc agtactgggg cctggagctg 2400
aagaagagcg ccatcagcct gctggacacc atcgccatcg ccgtggccga gggcaccgac 2460
cgcatcatcg agttcatcca gcgcatctgc cgcgccatcc gcaacatccc ccgccgcatc 2520
cgccagggct tcgaggccgc cctgcag 2547

<210> 10
<211> 1035
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic a
gp41 coding region of HIV strain AF110968

<400> 10
gccgtgggca tcggcgccgt gttcctgggc ttcctgggcg ccgccggcag caccatgggc 60
gccgccagca tcaccctgac cgtgcaggcc cgcctgctgc tgagcggcat cgtgcagcag 120
cagaacaacc tgctgcgcgc catcgaggcc cagcagcacc tgctgcagct gaccgtgtgg 180
ggcatcaagc agctgcagac ccgcatcctg gccgtggagc gctacctgaa ggaccagcag 240
ctgctgggca tctggggctg cagcggcaag ctgatctgca ccaccgccgt gccctggaac 300

agcagctgga gcaaccgcag ccacgacgag atctgggaca acatgacctg gatgcagtgg 360
gaccgcgaga tcaacaacta caccgacacc atctaccgcc tgctggagga gagccagaac 420
cagcaggaga agaacgagaa ggacctgctg gccctggaca gctggcagaa cctgtggaac 480
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gccctgaagt acctgggcag cctggtgcag tactggggcc tggagctgaa gaagagcgcc 900
atcagcctgc tggacaccat cgccatcgcc gtggccgagg gcaccgaccg catcatcgag 960
ttcatccagc gcatctgccg cgccatccgc aacatccccc gccgcatccg ccagggcttc 1020
gaggccgccc tgcag 1035

<210> 11
<211> 144
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic Env
common region of HIV strain AF110975

<400> 11
agcatcatca ccctgccctg ccgcatcaag cagatcatcg acatgtggca gaaggtgggc 60
cgcgccatct acgccccccc catcgagggc aacatcacct gcagcagcag catcaccggc 120
ctgctgctgg cccgcgacgg cggc 144

<210> 12
<211> 1437
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
gp120 coding region of HIV strain AF110975

<400> 12
agcggcctgg gcaacctgtg ggtgaccgtg tacgacggcg tgcccgtgtg gcgcgaggcc 60
agcaccaccc tgttctgcgc cagcgacgcc aaggcctacg agaaggaggt gcacaacgtg 120
tgggccaccc acgcctgcgt gcccaccgac cccaaccccc aggagatcga gctggacaac 180
gtgaccgaga acttcaacat gtggaagaac gacatggtgg accagatgca cgaggacatc 240
atcagcctgt gggaccagag cctgaagccc cgcgtgaagc tgacccccct gtgcgtgacc 300
ctgaagtgca ccaactacag caccaactac agcaacacca tgaacgccac cagctacaac 360
aacaacacca ccgaggagat caagaactgc accttcaaca tgaccaccga gctgcgcgac 420
aagaagcagc aggtgtacgc cctgttctac aagctggaca tcgtgccccc gaacagcaac 480
agcagcgagt accgcctgat caactgcaac accagcgcca tcacccaggc ctgccccaag 540
gtgagcttcg accccatccc catccactac tgcgcccccg ccggctacgc catcctgaag 600
tgcaagaaca acaccagcaa cggcaccggc ccctgccaga acgtgagcac cgtgcagtgc 660
acccacggca tcaagcccgt ggtgagcacc cccctgctgc tgaacggcag cctggccgag 720
ggcggcgaga tcatcatccg cagcaagaac ctgagcaaca acgcctacac catcatcgtg 780
cacctgaacg acagcgtgga gatcgtgtgc acccgcccca acaacaacac ccgcaagggc 840
atccgcatcg gccccggcca gaccttctac gccaccgaga acatcatcgg cgacatccgc 900
caggcccact gcaacatcag cgccggcgag tggaacaagg ccgtgcagcg cgtgagcgcc 960

aagctgcgcg agcacttccc caacaagacc atcgagttcc agcccagcag cggcggcgac 1020
ctggagatca ccacccacag cttcaactgc cgcggcgagt tcttctactg caacaccagc 1080
aagctgttca acagcagcta caacggcacc agctaccgcg gcaccgagag caacagcagc 1140
atcatcaccc tgccctgccg catcaagcag atcatcgaca tgtggcagaa ggtgggccgc 1200
gccatctacg ccccccccat cgagggcaac atcacctgca gcagcagcat caccggcctg 1260
ctgctggccc gcgacggcgg cctggacaac atcaccaccg agatcttccg cccccagggc 1320
ggcgacatga aggacaactg gcgcaacgag ctgtacaagt acaaggtggt ggagatcaag 1380
cccctgggcg tggcccccac cgaggccaag cgccgcgtgg tggagcgcga gaagcgc 1437

<210> 13
<211> 1950
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
gp140 coding region of HIV strain AF110975

<400> 13
agcggcctgg gcaacctgtg ggtgaccgtg tacgacggcg tgcccgtgtg gcgcgaggcc 60
agcaccaccc tgttctgcgc cagcgacgcc aaggcctacg agaaggaggt gcacaacgtg 120
tgggccaccc acgcctgcgt gcccaccgac cccaaccccc aggagatcga gctggacaac 180
gtgaccgaga acttcaacat gtggaagaac gacatggtgg accagatgca cgaggacatc 240
atcagcctgt gggaccagag cctgaagccc cgcgtgaagc tgaccccccc gtgcgtgacc 300
ctgaagtgca ccaactacag caccaactac agcaacacca tgaacgccac cagctacaac 360
aacaacacca ccgaggagat caagaactgc accttcaaca tgaccaccga gctgcgcgac 420
aagaagcagc aggtgtacgc cctgttctac aagctggaca tcgtgccccc gaacagcaac 480
agcagcgagt accgcctgat caactgcaac accagcgcca tcacccaggc ctgccccaag 540
gtgagcttcg accccatccc catccactac tgcgcccccg ccggctacgc catcctgaag 600
tgcaagaaca acaccagcaa cggcaccggc ccctgccaga acgtgagcac cgtgcagtgc 660
acccacggca tcaagcccgt ggtgagcacc cccctgctgc tgaacggcag cctggccgag 720
ggcggcgaga tcatcatccg cagcaagaac ctgagcaaca acgcctacac catcatcgtg 780
cacctgaacg acagcgtgga gatcgtgtgc acccgccccа acaacaacac ccgcaagggc 840
atccgcatcg gccccggcca gaccttctac gccaccgaga acatcatcgg cgacatccgc 900
caggcccact gcaacatcag cgccggcgag tggaacaagg ccgtgcagcg cgtgagcgcc 960
aagctgcgcg agcacttccc caacaagacc atcgagttcc agcccagcag cggcggcgac 1020
ctggagatca ccacccacag cttcaactgc cgcggcgagt tcttctactg caacaccagc 1080
aagctgttca acagcagcta caacggcacc agctaccgcg gcaccgagag caacagcagc 1140
atcatcaccc tgccctgccg catcaagcag atcatcgaca tgtggcagaa ggtgggccgc 1200
gccatctacg ccccccccat cgagggcaac atcacctgca gcagcagcat caccggcctg 1260
ctgctggccc gcgacggcgg cctggacaac atcaccaccg agatcttccg cccccagggc 1320
ggcgacatga aggacaactg gcgcaacgag ctgtacaagt acaaggtggt ggagatcaag 1380
cccctgggcg tggcccccac cgaggccaag cgccgcgtgg tggagcgcga gaagcgcgcc 1440
gtgggcatcg gcgccgtgat cttcggcttc ctgggcgccg ccggcagcaa catgggcgcc 1500
gccagcatca ccctgaccgc ccaggcccgc cagctgctga gcggcatcgt gcagcagcag 1560
agcaacctgc tgcgcgccat cgaggcccag cagcacatgc tgcagctgac cgtgtggggc 1620
atcaagcagc tgcaggcccg cgtgctggcc atcgagcgct acctgaagga ccagcagctg 1680
ctgggcatct ggggctgcag cggcaagctg atctgcacca ccaccgtgcc ctggaacagc 1740
agctggagca acaagaccca gggcgagatc tgggagaaca tgacctggat gcagtgggac 1800
aaggagatca gcaactacac cggcatcatc taccgcctgc tggaggagag ccagaaccag 1860
caggagcaga acgagaagga cctgctggcc ctggacagcc gcaacaacct gtggagctgg 1920
ttcaacatca gcaactggct gtggtacatc 1950

<210> 14

<211> 2493
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
gp160 coding region of HIV strain AF110975

<400> 14
agcggcctgg gcaacctgtg ggtgaccgtg tacgacggcg tgcccgtgtg gcgcgaggcc 60
agcaccaccc tgttctgcgc cagcgacgcc aaggcctacg agaaggaggt gcacaacgtg 120
tgggccaccc acgcctgcgt gcccaccgac cccaaccccc aggagatcga gctggacaac 180
gtgaccgaga acttcaacat gtggaagaac gacatggtgg accagatgca cgaggacatc 240
atcagcctgt gggaccagag cctgaagccc cgcgtgaagc tgacccccct gtgcgtgacc 300
ctgaagtgca ccaactacag caccaactac agcaacacca tgaacgccac cagctacaac 360
aacaacacca ccgaggagat caagaactgc accttcaaca tgaccaccga gctgcgcgac 420
aagaagcagc aggtgtacgc cctgttctac aagctggaca tcgtgcccct gaacagcaac 480
agcagcgagt accgcctgat caactgcaac accagcgcca tcacccaggc ctgccccaag 540
gtgagcttcg accccatccc catccactac tgcgcccccg ccggctacgc catcctgaag 600
tgcaagaaca acaccagcaa cggcaccggc ccctgccaga acgtgagcac cgtgcagtgc 660
acccacggca tcaagcccgt ggtgagcacc cccctgctgc tgaacggcag cctggccgag 720
ggcggcgaga tcatcatccg cagcaagaac ctgagcaaca acgcctacac catcatcgtg 780
cacctgaacg acagcgtgga gatcgtgtgc acccgcccca acaacaacac ccgcaagggc 840
atccgcatcg gccccggcca gaccttctac gccaccgaga acatcatcgg cgacatccgc 900
caggcccact gcaacatcag cgccggcgag tggaacaagg ccgtgcagcg cgtgagcgcc 960
aagctgcgcg agcacttccc caacaagacc atcgagttcc agcccagcag cggcggcgac 1020
ctggagatca ccacccacag cttcaactgc cgcggcgagt tcttctactg caacaccagc 1080
aagctgttca acagcagcta caacggcacc agctaccgcg gcaccgagag caacagcagc 1140
atcatcaccc tgccctgccg catcaagcag atcatcgaca tgtggcagaa ggtgggccgc 1200
gccatctacg ccccccccat cgagggcaac atcacctgca gcagcagcat caccggcctg 1260
ctgctggccc gcgacggcgg cctggacaac atcaccaccg agatcttccg cccccagggc 1320
ggcgacatga aggacaactg gcgcaacgag ctgtacaagt acaaggtggt ggagatcaag 1380
cccctgggcg tggcccccac cgaggccaag cgccgcgtgg tggagcgcga gaagcgcgcc 1440
gtgggcatcg gcgccgtgat cttcggcttc ctgggcgccg ccggcagcaa catgggcgcc 1500
gccagcatca ccctgaccgc ccaggcccgc cagctgctga gcggcatcgt gcagcagcag 1560
agcaacctgc tgcgcgccat cgaggcccag cagcacatgc tgcagctgac cgtgtggggc 1620
atcaagcagc tgcaggcccg cgtgctggcc atcgagcgct acctgaagga ccagcagctg 1680
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agctggagca acaagaccca gggcgagatc tgggagaaca tgacctggat gcagtgggac 1800
aaggagatca gcaactacac cggcatcatc taccgcctgc tggaggagag ccagaaccag 1860
caggagcaga acgagaagga cctgctggcc ctggacagcc gcaacaacct gtggagctgg 1920
ttcaacatca gcaactggct gtggtacatc aagatcttca tcatgatcgt gggcggcctg 1980
atcggcctgc gcatcatctt cgccgtgctg agcatcgtga accgcgtgcg ccagggctac 2040
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atcgaggagg agggcggcga gcaggaccgc gaccgcagca tccgcctggt gcagggcttc 2160
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ctgcagcgcg gctgggaggc cctgaagtac ctgggcagcc tggtgcagta ctggggcctg 2340
gagctgaaga agagcgccac cagcctgctg gacagcatcg ccatcgccgt ggccgagggc 2400
accgaccgca tcatcgaggt gatccagcgc atctaccgcg ccttctgcaa catccccgc 2460
cgcgtgcgcc agggcttcga ggccgccctg cag 2493

<210> 15
<211> 2565

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
signal sequence and gp160 coding region of HIV
strain AF110975

<400> 15
atgcgcgtgc gcggcatcct gcgcagctgg cagcagtggt ggatctgggg catcctgggc 60
ttctggatct gcagcggcct gggcaacctg tgggtgaccg tgtacgacgg cgtgcccgtg 120
tggcgcgagg ccagcaccac cctgttctgc gccagcgacg ccaaggccta cgagaaggag 180
gtgcacaacg tgtgggccac ccacgcctgc gtgcccaccg accccaaccc ccaggagatc 240
gagctggaca acgtgaccga gaacttcaac atgtggaaga acgacatggt ggaccagatg 300
cacgaggaca tcatcagcct gtgggaccag agcctgaagc cccgcgtgaa gctgacccc 360
ctgtgcgtga ccctgaagtg caccaactac agcaccaact acagcaacac catgaacgcc 420
accagctaca acaacaacac caccgaggag atcaagaact gcaccttcaa catgaccacc 480
gagctgcgcg acaagaagca gcaggtgtac gccctgttct acaagctgga catcgtgccc 540
ctgaacagca acagcagcga gtaccgcctg atcaactgca acaccagcgc catcacccag 600
gcctgccccа aggtgagctt cgaccccatc cccatccact actgcgcccc cgccggctac 660
gccatcctga agtgcaagaa caacaccagc aacggcaccg gcccctgcca gaacgtgagc 720
accgtgcagt gcacccacgg catcaagccc gtggtgagca ccccctgct gctgaacggc 780
agcctggccg agggcggcga gatcatcatc cgcagcaaga acctgagcaa caacgcctac 840
accatcatcg tgcacctgaa cgacagcgtg gagatcgtgt gcacccgccc caacaacaac 900
acccgcaagg gcatccgcat cggccccggc cagaccttct acgccaccga gaacatcatc 960
ggcgacatcc gccaggccca ctgcaacatc agcgccggcg agtggaacaa ggccgtgcag 1020
cgcgtgagcg ccaagctgcg cgagcacttc cccaacaaga ccatcgagtt ccagcccagc 1080
agcggcggcg acctggagat caccacccac agcttcaact gccgcggcga gttcttctac 1140
tgcaacacca gcaagctgtt caacagcagc tacaacggca ccagctaccg cggcaccgag 1200
agcaacagca gcatcatcac cctgccctgc cgcatcaagc agatcatcga catgtggcag 1260
aaggtgggcc gcgccatcta cgccccccccc atcgagggca acatcacctg cagcagcagc 1320
atcaccggcc tgctgctggc ccgcgacggc ggcctggaca acatcaccac cgagatcttc 1380
cgcccccagg gcggcgacat gaaggacaac tggcgcaacg agctgtacaa gtacaaggtg 1440
gtggagatca agcccctggg cgtggccccc accgaggcca agcgccgcgt ggtggagcgc 1500
gagaagcgcg ccgtgggcat cggcgccgtg atcttcggct tcctgggcgc cgccggcagc 1560
aacatgggcg ccgccagcat caccctgacc gcccaggccc gccagctgct gagcggcatc 1620
gtgcagcagc agagcaacct gctgcgcgcc atcgaggccc agcagcacat gctgcagctg 1680
accgtgtggg gcatcaagca gctgcaggcc cgcgtgctgg ccatcgagcg ctacctgaag 1740
gaccagcagc tgctgggcat ctggggctgc agcggcaagc tgatctgcac caccaccgtg 1800
ccctggaaca gcagctggag caacaagacc cagggcgaga tctgggagaa catgacctgg 1860
atgcagtggg acaaggagat cagcaactac accggcatca tctaccgcct gctggaggag 1920
agccagaacc agcaggagca gaacgagaag gacctgctgg ccctggacag ccgcaacaac 1980
ctgtggagct ggttcaacat cagcaactgg ctgtggtaca tcaagatctt catcatgatc 2040
gtgggcggcc tgatcggcct gcgcatcatc ttcgccgtgc tgagcatcgt gaaccgcgtg 2100
cgccagggct acagcccccct gagcttccag accctgaccc ccaacccccg cggcctggac 2160
cgcctgggcc gcatcgagga ggagggcggc gagcaggacc gcgaccgcag catccgcctg 2220
gtgcagggct tcctggccct ggcctgggac gacctgcgca gcctgtgcct gttcagctac 2280
caccgcctgc gcgacctgat cctggtgacc gcccgcgtgg tggagctgct gggccgcagc 2340
agcccccgcg gcctgcagcg cggctgggag gccctgaagt acctgggcag cctggtgcag 2400
tactggggcc tggagctgaa gaagagcgcc accagcctgc tggacagcat cgccatcgcc 2460
gtggccgagg gcaccgaccg catcatcgag gtgatccagc gcatctaccg cgccttctgc 2520
aacatccccc gccgcgtgcg ccagggcttc gaggccgccc tgcag 2565

<210> 16

<211> 1056
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic a
gp41 coding region of HIV strain AF110975

<400> 16
gccgtgggca tcggcgccgt gatcttcggc ttcctgggcg ccgccggcag caacatgggc 60
gccgccagca tcaccctgac cgcccaggcc cgccagctgc tgagcggcat cgtgcagcag 120
cagagcaacc tgctgcgcgc catcgaggcc cagcagcaca tgctgcagct gaccgtgtgg 180
ggcatcaagc agctgcaggc ccgcgtgctg gccatcgagc gctacctgaa ggaccagcag 240
ctgctgggca tctggggctg cagcggcaag ctgatctgca ccaccaccgt gccctggaac 300
agcagctgga gcaacaagac ccagggcgag atctgggaga acatgacctg gatgcagtgg 360
gacaaggaga tcagcaacta caccggcatc atctaccgcc tgctggagga gagccagaac 420
cagcaggagc agaacgagaa ggacctgctg gccctggaca gccgcaacaa cctgtggagc 480
tggttcaaca tcagcaactg gctgtggtac atcaagatct tcatcatgat cgtgggcggc 540
ctgatcggcc tgcgcatcat cttcgccgtg ctgagcatcg tgaaccgcgt gcgccagggc 600
tacagccccc tgagcttcca gaccctgacc cccaaccccc gcggcctgga ccgcctgggc 660
cgcatcgagg aggagggcgg cgagcaggac cgcgaccgca gcatccgcct ggtgcagggc 720
ttcctggccc tggcctggga cgacctgcgc agcctgtgcc tgttcagcta ccaccgcctg 780
cgcgacctga tcctggtgac cgcccgcgtg gtggagctgc tgggccgcag cagcccccgc 840
ggcctgcagc gcggctggga ggccctgaag tacctgggca gcctggtgca gtactggggc 900
ctggagctga agaagagcgc caccagcctg ctggacagca tcgccatcgc cgtggccgag 960
ggcaccgacc gcatcatcga ggtgatccag cgcatctacc gcgccttctg caacatcccc 1020
cgccgcgtgc gccagggctt cgaggccgcc ctgcag 1056

<210> 17
<211> 492
<212> PRT
<213> Human immunodeficiency virus

<400> 17
Met Gly Ala Arg Ala Ser Ile Leu Arg Gly Gly Lys Leu Asp Ala Trp
1 5 10 15

Glu Arg Ile Arg Leu Arg Pro Gly Gly Lys Lys Cys Tyr Met Met Lys
20 25 30

His Leu Val Trp Ala Ser Arg Glu Leu Glu Lys Phe Ala Leu Asn Pro
35 40 45

Gly Leu Leu Glu Thr Ser Glu Gly Cys Lys Gln Ile Ile Arg Gln Leu
50 55 60

His Pro Ala Leu Gln Thr Gly Ser Glu Glu Leu Lys Ser Leu Phe Asn
65 70 75 80

Thr Val Ala Thr Leu Tyr Cys Val His Glu Lys Ile Glu Val Arg Asp
85 90 95

Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu Gln Asn Lys Cys Gln
100 105 110

Gln Lys Ile Gln Gln Ala Glu Ala Ala Asp Lys Gly Lys Val Ser Gln
115 120 125

Asn Tyr Pro Ile Val Gln Asn Leu Gln Gly Gln Met Val His Gln Ala
130 135 140

Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Ile Glu Glu Lys
145 150 155 160

Ala Phe Ser Pro Glu Val Ile Pro Met Phe Thr Ala Leu Ser Glu Gly
165 170 175

Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly His
180 185 190

Gln Ala Ala Met Gln Met Leu Lys Asp Thr Ile Asn Glu Glu Ala Ala
195 200 205

Glu Trp Asp Arg Val His Pro Val His Ala Gly Pro Ile Ala Pro Gly
210 215 220

Gln Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr Ser Thr
225 230 235 240

Leu Gln Glu Gln Ile Ala Trp Met Thr Ser Asn Pro Pro Ile Pro Val
245 250 255

Gly Asp Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val
260 265 270

Arg Met Tyr Ser Pro Val Ser Ile Leu Asp Ile Lys Gln Gly Pro Lys
275 280 285

Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Phe Lys Thr Leu Arg Ala
290 295 300

Glu Gln Ser Thr Gln Glu Val Lys Asn Trp Met Thr Asp Thr Leu Leu
305 310 315 320

Val Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Arg Ala Leu Gly
325 330 335

Pro Gly Ala Ser Leu Glu Glu Met Met Thr Ala Cys Gln Gly Val Gly
340 345 350

Gly Pro Ser His Lys Ala Arg Val Leu Ala Glu Ala Met Ser Gln Ala
355 360 365

Asn Thr Ser Val Met Met Gln Lys Ser Asn Phe Lys Gly Pro Arg Arg
370 375 380

Ile Val Lys Cys Phe Asn Cys Gly Lys Glu Gly His Ile Ala Arg Asn
385 390 395 400

Cys Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys Cys Gly Lys Glu Gly
405 410 415

His Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn Phe Leu Gly Lys
420 425 430

Ile Trp Pro Ser His Lys Gly Arg Pro Gly Asn Phe Leu Gln Ser Arg
435 440 445

Pro Glu Pro Thr Ala Pro Pro Ala Glu Ser Phe Arg Phe Glu Glu Thr
450 455 460

Thr Pro Gly Gln Lys Gln Glu Ser Lys Asp Arg Glu Thr Leu Thr Ser
465 470 475 480

Leu Lys Ser Leu Phe Gly Asn Asp Pro Leu Ser Gln
485 490

<210> 18
<211> 81
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic signal sequence of HIV strain AF110968

<400> 18
atgcgcgtga tgggcatcct gaagaactac cagcagtggt ggatgtgggg catcctgggc 60
ttctggatgc tgatcatcag c 81

<210> 19
<211> 72
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic signal sequence of HIV strain AF110975

<400> 19
atgcgcgtgc gcggcatcct gcgcagctgg cagcagtggt ggatctgggg catcctgggc 60
ttctggatct gc 72

<210> 20
<211> 1479
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic Gag coding sequence of HIV strain AF110965

<400> 20
atgggcgccc gcgccagcat cctgcgcggc ggcaagctgg acgcctggga gcgcatccgc 60
ctgcgccccg gcggcaagaa gtgctacatg atgaagcacc tggtgtgggc cagccgcgag 120
ctggagaagt tcgccctgaa ccccggcctg ctggagacca gcgagggctg caagcagatc 180
atccgccagc tgcaccccgc cctgcagacc ggcagcgagg agctgaagag cctgttcaac 240
accgtggcca ccctgtactg cgtgcacgag aagatcgagg tgcgcgacac caaggaggcc 300
ctggacaaga tcgaggagga gcagaacaag tgccagcaga agatccagca ggccgaggcc 360
gccgacaagg gcaaggtgag ccagaactac cccatcgtgc agaacctgca gggccagatg 420
gtgcaccagg ccatcagccc ccgcaccctg aacgcctggg tgaaggtgat cgaggagaag 480
gccttcagcc ccgaggtgat ccccatgttc accgccctga gcgagggcgc cacccccag 540
gacctgaaca ccatgctgaa caccgtgggc ggccaccagg ccgccatgca gatgctgaag 600
gacaccatca acgaggaggc cgccgagtgg gaccgcgtgc accccgtgca cgccggcccc 660
atcgcccccg gccagatgcg cgagccccgc ggcagcgaca tcgccggcac caccagcacc 720
ctgcaggagc agatcgcctg gatgaccagc aacccccca tccccgtggg cgacatctac 780
aagcgctgga tcatcctggg cctgaacaag atcgtgcgca tgtacagccc cgtgagcatc 840
ctggacatca agcagggccc caaggagccc ttccgcgact acgtggaccg cttcttcaag 900
accctgcgcg ccgagcagag cacccaggag gtgaagaact ggatgaccga caccctgctg 960
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ctggaggaga tgatgaccgc ctgccagggc gtgggcggcc ccagccacaa ggcccgcgtg 1080
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ggcccccgcc gcatcgtgaa gtgcttcaac tgcggcaagg agggccacat cgcccgcaac 1200
tgccgcgccc cccgcaagaa gggctgctgg aagtgcggca aggagggcca ccagatgaag 1260
gactgcaccg agcgccaggc caacttcctg ggcaagatct ggcccagcca caagggccgc 1320
cccggcaact tcctgcagag ccgccccgag cccaccgccc cccccgccga gagcttccgc 1380
ttcgaggaga ccacccccgg ccagaagcag gagagcaagg accgcgagac cctgaccagc 1440
ctgaagagcc tgttcggcaa cgacccccctg agccagtaa 1479

<210> 21
<211> 1509
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic Gag
coding sequence of HIV strain AF110967

<400> 21
atgggcgccc gcgccagcat cctgcgcggc gagaagctgg acaagtggga gaagatccgc 60
ctgcgccccg gcggcaagaa gcactacatg ctgaagcacc tggtgtgggc agccgcgag 120
ctggagggct tcgccctgaa ccccggcctg ctggagaccg ccgagggctg caagcagatc 180
atgaagcagc tgcagcccgc cctgcagacc ggcaccgagg agctgcgcag cctgtacaac 240
accgtggcca ccctgtactg cgtgcacgcc ggcatcgagg tgcgcgacac caaggaggcc 300
ctggacaaga tcgaggagga gcagaacaag agccagcaga agacccagca ggccaaggag 360
gccgacggca aggtgagcca gaactacccc atcgtgcaga acctgcaggg ccagatggtg 420
caccaggcca tcagcccccg caccctgaac gcctgggtga aggtgatcga ggagaaggcc 480
ttcagccccg aggtgatccc catgttcacc gccctgagcg agggcgccac cccccaggac 540
ctgaacacca tgctgaacac cgtgggcggc caccaggccg ccatgcagat gctgaaggac 600
accatcaacg aggaggccgc cgagtgggac cgcctgcacc ccgtgcaggc cggccccgtg 660
gcccccggcc agatgcgcga cccccgcggc agcgacatcg ccggcgccac cagcaccctg 720
caggagcaga tcgcctggat gaccagcaac ccccccgtgc ccgtgggcga catctacaag 780
cgctggatca tcctgggcct gaacaagatc gtgcgcatgt acagccccgt gagcatcctg 840
gacatccgcc agggccccaa ggagcccttc cgcgactacg tggaccgctt cttcaagacc 900
ctgcgcgccg agcaggccac ccaggacgtg aagaactgga tgaccgagac cctgctggtg 960
cagaacgcca accccgactg caagaccatc ctgcgcgccc tgggccccgg cgccaccctg 1020

gaggagatga tgaccgcctg ccagggcgtg ggcggccccg gccacaaggc ccgcgtgctg 1080
gccgaggcca tgagccaggc caacagcgtg aacatcatga tgcagaagag caacttcaag 1140
ggcccccgcc gcaacgtgaa gtgcttcaac tgcggcaagg agggccacat cgccaagaac 1200
tgccgcgccc cccgcaagaa gggctgctgg aagtgcggca aggagggcca ccagatgaag 1260
gactgcaccg agcgccaggc caacttcctg ggcaagatct ggcccagcca caagggccgc 1320
cccggcaact tcctgcagaa ccgcagcgag cccgccgccc ccaccgtgcc caccgccccc 1380
cccgccgaga gcttccgctt cgaggagacc acccccgccc ccaagcagga gcccaaggac 1440
cgcgagccct accgcgagcc cctgaccgcc ctgcgcagcc tgttcggcag cggccccctg 1500
agccagtaa 1509

<210> 22
<211> 502
<212> PRT
<213> Human immunodeficiency virus

<400> 22

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Met Gly Ala Arg Ala Ser Ile Leu Arg Gly Glu Lys Leu Asp Lys Trp
  1               5                  10                  15

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys His Tyr Met Leu Lys
             20                  25                  30

His Leu Val Trp Ala Ser Arg Glu Leu Glu Gly Phe Ala Leu Asn Pro
         35                  40                  45

Gly Leu Leu Glu Thr Ala Glu Gly Cys Lys Gln Ile Met Lys Gln Leu
     50                  55                  60

Gln Pro Ala Leu Gln Thr Gly Thr Glu Glu Leu Arg Ser Leu Tyr Asn
 65                  70                  75                  80

Thr Val Ala Thr Leu Tyr Cys Val His Ala Gly Ile Glu Val Arg Asp
                 85                  90                  95

Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu Gln Asn Lys Ser Gln
            100                 105                 110

Gln Lys Thr Gln Gln Ala Lys Glu Ala Asp Gly Lys Val Ser Gln Asn
        115                 120                 125

Tyr Pro Ile Val Gln Asn Leu Gln Gly Gln Met Val His Gln Ala Ile
    130                 135                 140

Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Ile Glu Glu Lys Ala
145                 150                 155                 160

Phe Ser Pro Glu Val Ile Pro Met Phe Thr Ala Leu Ser Glu Gly Ala
                165                 170                 175

Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly His Gln
            180                 185                 190

Ala Ala Met Gln Met Leu Lys Asp Thr Ile Asn Glu Glu Ala Ala Glu
        195                 200                 205
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Trp Asp Arg Leu His Pro Val Gln Ala Gly Pro Val Ala Pro Gly Gln
210 215 220

Met Arg Asp Pro Arg Gly Ser Asp Ile Ala Gly Ala Thr Ser Thr Leu
225 230 235 240

Gln Glu Gln Ile Ala Trp Met Thr Ser Asn Pro Pro Val Pro Val Gly
245 250 255

Asp Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg
260 265 270

Met Tyr Ser Pro Val Ser Ile Leu Asp Ile Arg Gln Gly Pro Lys Glu
275 280 285

Pro Phe Arg Asp Tyr Val Asp Arg Phe Phe Lys Thr Leu Arg Ala Glu
290 295 300

Gln Ala Thr Gln Asp Val Lys Asn Trp Met Thr Glu Thr Leu Leu Val
305 310 315 320

Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Arg Ala Leu Gly Pro
325 330 335

Gly Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly Val Gly Gly
340 345 350

Pro Gly His Lys Ala Arg Val Leu Ala Glu Ala Met Ser Gln Ala Asn
355 360 365

Ser Val Asn Ile Met Met Gln Lys Ser Asn Phe Lys Gly Pro Arg Arg
370 375 380

Asn Val Lys Cys Phe Asn Cys Gly Lys Glu Gly His Ile Ala Lys Asn
385 390 395 400

Cys Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys Cys Gly Lys Glu Gly
405 410 415

His Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn Phe Leu Gly Lys
420 425 430

Ile Trp Pro Ser His Lys Gly Arg Pro Gly Asn Phe Leu Gln Asn Arg
435 440 445

Ser Glu Pro Ala Ala Pro Thr Val Pro Thr Ala Pro Pro Ala Glu Ser
450 455 460

Phe Arg Phe Glu Glu Thr Thr Pro Ala Pro Lys Gln Glu Pro Lys Asp
465 470 475 480

Arg Glu Pro Tyr Arg Glu Pro Leu Thr Ala Leu Arg Ser Leu Phe Gly
485 490 495

Ser Gly Pro Leu Ser Gln
500

<210> 23
<211> 849
<212> PRT
<213> Human immunodeficiency virus

<400> 23
Met Arg Val Met Gly Ile Leu Lys Asn Tyr Gln Gln Trp Trp Met Trp
1 5 10 15

Gly Ile Leu Gly Phe Trp Met Leu Ile Ile Ser Ser Val Val Gly Asn
20 25 30

Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Lys
35 40 45

Thr Thr Leu Phe Cys Thr Ser Asp Ala Lys Ala Tyr Glu Thr Glu Val
50 55 60

His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
65 70 75 80

Gln Glu Ile Val Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
85 90 95

Asn Asp Met Val Asp Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp
100 105 110

Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
115 120 125

Lys Cys Arg Asn Val Asn Ala Thr Asn Asn Ile Asn Ser Met Ile Asp
130 135 140

Asn Ser Asn Lys Gly Glu Met Lys Asn Cys Ser Phe Asn Val Thr Thr
145 150 155 160

Glu Leu Arg Asp Arg Lys Gln Glu Val His Ala Leu Phe Tyr Arg Leu
165 170 175

Asp Val Val Pro Leu Gln Gly Asn Asn Ser Asn Glu Tyr Arg Leu Ile
180 185 190

Asn Cys Asn Thr Ser Ala Ile Thr Gln Ala Cys Pro Lys Val Ser Phe
195 200 205

Asp Pro Ile Pro Ile His Tyr Cys Thr Pro Ala Gly Tyr Ala Ile Leu
210 215 220

Lys Cys Asn Asn Gln Thr Phe Asn Gly Thr Gly Pro Cys Asn Asn Val
225 230 235 240

Ser Ser Val Gln Cys Ala His Gly Ile Lys Pro Val Val Ser Thr Gln
245 250 255

Leu Leu Leu Asn Gly Ser Leu Ala Lys Gly Glu Ile Ile Ile Arg Ser
260 265 270

Glu Asn Leu Ala Asn Asn Ala Lys Ile Ile Ile Val Gln Leu Asn Lys
275 280 285

Pro Val Lys Ile Val Cys Val Arg Pro Asn Asn Asn Thr Arg Lys Ser
290 295 300

Val Arg Ile Gly Pro Gly Gln Thr Phe Tyr Ala Thr Gly Glu Ile Ile
305 310 315 320

Gly Asp Ile Arg Gln Ala Tyr Cys Ile Ile Asn Lys Thr Glu Trp Asn
325 330 335

Ser Thr Leu Gln Gly Val Ser Lys Lys Leu Glu Glu His Phe Ser Lys
340 345 350

Lys Ala Ile Lys Phe Glu Pro Ser Ser Gly Gly Asp Leu Glu Ile Thr
355 360 365

Thr His Ser Phe Asn Cys Arg Gly Glu Phe Phe Tyr Cys Asp Thr Ser
370 375 380

Gln Leu Phe Asn Ser Thr Tyr Ser Pro Ser Phe Asn Gly Thr Glu Asn
385 390 395 400

Lys Leu Asn Gly Thr Ile Thr Ile Thr Cys Arg Ile Lys Gln Ile Ile
405 410 415

Asn Met Trp Gln Lys Val Gly Arg Ala Met Tyr Ala Pro Pro Ile Ala
420 425 430

Gly Asn Leu Thr Cys Glu Ser Asn Ile Thr Gly Leu Leu Leu Thr Arg
435 440 445

Asp Gly Gly Lys Thr Gly Pro Asn Asp Thr Glu Ile Phe Arg Pro Gly
450 455 460

Gly Gly Asp Met Arg Asp Asn Trp Arg Asn Glu Leu Tyr Lys Tyr Lys
465 470 475 480

Val Val Glu Ile Lys Pro Leu Gly Val Ala Pro Thr Glu Ala Lys Arg
485 490 495

Arg Val Val Glu Arg Glu Lys Arg Ala Val Gly Ile Gly Ala Val Phe
500 505 510

Leu Gly Phe Leu Gly Ala Ala Gly Ser Thr Met Gly Ala Ala Ser Ile
515 520 525

Thr Leu Thr Val Gln Ala Arg Leu Leu Leu Ser Gly Ile Val Gln Gln
530 535 540

Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln
545 550 555 560

Leu Thr Val Trp Gly Ile Lys Gln Leu Gln Thr Arg Ile Leu Ala Val
565 570 575

Glu Arg Tyr Leu Lys Asp Gln Gln Leu Leu Gly Ile Trp Gly Cys Ser
580 585 590

Gly Lys Leu Ile Cys Thr Thr Ala Val Pro Trp Asn Ser Ser Trp Ser
595 600 605

Asn Arg Ser His Asp Glu Ile Trp Asp Asn Met Thr Trp Met Gln Trp
610 615 620

Asp Arg Glu Ile Asn Asn Tyr Thr Asp Thr Ile Tyr Arg Leu Leu Glu
625 630 635 640

Glu Ser Gln Asn Gln Gln Glu Lys Asn Glu Lys Asp Leu Leu Ala Leu
645 650 655

Asp Ser Trp Gln Asn Leu Trp Asn Trp Phe Ser Ile Thr Asn Trp Leu
660 665 670

Trp Tyr Ile Lys Ile Phe Ile Met Ile Val Gly Gly Leu Ile Gly Leu
675 680 685

Arg Ile Ile Phe Ala Val Leu Ser Ile Val Asn Arg Val Arg Gln Gly
690 695 700

Tyr Ser Pro Leu Pro Phe Gln Thr Leu Thr Pro Asn Pro Arg Glu Pro
705 710 715 720

Asp Arg Leu Gly Arg Ile Glu Glu Glu Gly Gly Glu Gln Asp Arg Gly
725 730 735

Arg Ser Ile Arg Leu Val Ser Gly Phe Leu Ala Leu Ala Trp Asp Asp
740 745 750

Leu Arg Ser Leu Cys Leu Phe Ser Tyr His Arg Leu Arg Asp Phe Ile
755 760 765

Leu Ile Ala Ala Arg Val Leu Glu Leu Leu Gly Gln Arg Gly Trp Glu
770 775 780

Ala Leu Lys Tyr Leu Gly Ser Leu Val Gln Tyr Trp Gly Leu Glu Leu
785 790 795 800

Lys Lys Ser Ala Ile Ser Leu Leu Asp Thr Ile Ala Ile Ala Val Ala
805 810 815

Glu Gly Thr Asp Arg Ile Ile Glu Phe Ile Gln Arg Ile Cys Arg Ala
820 825 830

Ile Arg Asn Ile Pro Arg Arg Ile Arg Gln Gly Phe Glu Ala Ala Leu
835 840 845

Gln

<210> 24
<211> 855
<212> PRT
<213> Human immunodeficiency virus

<400> 24
Met Arg Val Arg Gly Ile Leu Arg Ser Trp Gln Gln Trp Trp Ile Trp
1 5 10 15

Gly Ile Leu Gly Phe Trp Ile Cys Ser Gly Leu Gly Asn Leu Trp Val
20 25 30

Thr Val Tyr Asp Gly Val Pro Val Trp Arg Glu Ala Ser Thr Thr Leu
35 40 45

Phe Cys Ala Ser Asp Ala Lys Ala Tyr Glu Lys Glu Val His Asn Val
50 55 60

Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro Gln Glu Ile
65 70 75 80

Glu Leu Asp Asn Val Thr Glu Asn Phe Asn Met Trp Lys Asn Asp Met
85 90 95

Val Asp Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp Gln Ser Leu
100 105 110

Lys Pro Arg Val Lys Leu Thr Pro Leu Cys Val Thr Leu Lys Cys Thr
115 120 125

Asn Tyr Ser Thr Asn Tyr Ser Asn Thr Met Asn Ala Thr Ser Tyr Asn
130 135 140

Asn Asn Thr Thr Glu Glu Ile Lys Asn Cys Thr Phe Asn Met Thr Thr
145 150 155 160

Glu Leu Arg Asp Lys Lys Gln Gln Val Tyr Ala Leu Phe Tyr Lys Leu
165 170 175

Asp Ile Val Pro Leu Asn Ser Asn Ser Ser Glu Tyr Arg Leu Ile Asn
180 185 190

Cys Asn Thr Ser Ala Ile Thr Gln Ala Cys Pro Lys Val Ser Phe Asp
195 200 205

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Pro Ile Pro Ile His Tyr Cys Ala Pro Ala Gly Tyr Ala Ile Leu Lys
    210                 215                 220

Cys Lys Asn Asn Thr Ser Asn Gly Thr Gly Pro Cys Gln Asn Val Ser
225                 230                 235                 240

Thr Val Gln Cys Thr His Gly Ile Lys Pro Val Val Ser Thr Pro Leu
                245                 250                 255

Leu Leu Asn Gly Ser Leu Ala Glu Gly Gly Glu Ile Ile Ile Arg Ser
            260                 265                 270

Lys Asn Leu Ser Asn Asn Ala Tyr Thr Ile Ile Val His Leu Asn Asp
        275                 280                 285

Ser Val Glu Ile Val Cys Thr Arg Pro Asn Asn Asn Thr Arg Lys Gly
    290                 295                 300

Ile Arg Ile Gly Pro Gly Gln Thr Phe Tyr Ala Thr Glu Asn Ile Ile
305                 310                 315                 320

Gly Asp Ile Arg Gln Ala His Cys Asn Ile Ser Ala Gly Glu Trp Asn
                325                 330                 335

Lys Ala Val Gln Arg Val Ser Ala Lys Leu Arg Glu His Phe Pro Asn
            340                 345                 350

Lys Thr Ile Glu Phe Gln Pro Ser Ser Gly Gly Asp Leu Glu Ile Thr
        355                 360                 365

Thr His Ser Phe Asn Cys Arg Gly Glu Phe Phe Tyr Cys Asn Thr Ser
    370                 375                 380

Lys Leu Phe Asn Ser Ser Tyr Asn Gly Thr Ser Tyr Arg Gly Thr Glu
385                 390                 395                 400

Ser Asn Ser Ser Ile Ile Thr Leu Pro Cys Arg Ile Lys Gln Ile Ile
                405                 410                 415

Asp Met Trp Gln Lys Val Gly Arg Ala Ile Tyr Ala Pro Pro Ile Glu
            420                 425                 430

Gly Asn Ile Thr Cys Ser Ser Ser Ile Thr Gly Leu Leu Leu Ala Arg
        435                 440                 445

Asp Gly Gly Leu Asp Asn Ile Thr Thr Glu Ile Phe Arg Pro Gln Gly
    450                 455                 460

Gly Asp Met Lys Asp Asn Trp Arg Asn Glu Leu Tyr Lys Tyr Lys Val
465                 470                 475                 480

Val Glu Ile Lys Pro Leu Gly Val Ala Pro Thr Glu Ala Lys Arg Arg
                485                 490                 495
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Val Val Glu Arg Glu Lys Arg Ala Val Gly Ile Gly Ala Val Ile Phe
500 505 510

Gly Phe Leu Gly Ala Ala Gly Ser Asn Met Gly Ala Ala Ser Ile Thr
515 520 525

Leu Thr Ala Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln
530 535 540

Ser Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Met Leu Gln Leu
545 550 555 560

Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Val Leu Ala Ile Glu
565 570 575

Arg Tyr Leu Lys Asp Gln Gln Leu Leu Gly Ile Trp Gly Cys Ser Gly
580 585 590

Lys Leu Ile Cys Thr Thr Thr Val Pro Trp Asn Ser Ser Trp Ser Asn
595 600 605

Lys Thr Gln Gly Glu Ile Trp Glu Asn Met Thr Trp Met Gln Trp Asp
610 615 620

Lys Glu Ile Ser Asn Tyr Thr Gly Ile Ile Tyr Arg Leu Leu Glu Glu
625 630 635 640

Ser Gln Asn Gln Gln Glu Gln Asn Glu Lys Asp Leu Leu Ala Leu Asp
645 650 655

Ser Arg Asn Asn Leu Trp Ser Trp Phe Asn Ile Ser Asn Trp Leu Trp
660 665 670

Tyr Ile Lys Ile Phe Ile Met Ile Val Gly Gly Leu Ile Gly Leu Arg
675 680 685

Ile Ile Phe Ala Val Leu Ser Ile Val Asn Arg Val Arg Gln Gly Tyr
690 695 700

Ser Pro Leu Ser Phe Gln Thr Leu Thr Pro Asn Pro Arg Gly Leu Asp
705 710 715 720

Arg Leu Gly Arg Ile Glu Glu Glu Gly Gly Glu Gln Asp Arg Asp Arg
725 730 735

Ser Ile Arg Leu Val Gln Gly Phe Leu Ala Leu Ala Trp Asp Asp Leu
740 745 750

Arg Ser Leu Cys Leu Phe Ser Tyr His Arg Leu Arg Asp Leu Ile Leu
755 760 765

Val Thr Ala Arg Val Val Glu Leu Leu Gly Arg Ser Ser Pro Arg Gly
770 775 780

Leu Gln Arg Gly Trp Glu Ala Leu Lys Tyr Leu Gly Ser Leu Val Gln
785 790 795 800

Tyr Trp Gly Leu Glu Leu Lys Lys Ser Ala Thr Ser Leu Leu Asp Ser
805 810 815

Ile Ala Ile Ala Val Ala Glu Gly Thr Asp Arg Ile Ile Glu Val Ile
820 825 830

Gln Arg Ile Tyr Arg Ala Phe Cys Asn Ile Pro Arg Arg Val Arg Gln
835 840 845

Gly Phe Glu Ala Ala Leu Gln
850 855

<210> 25
<211> 20
<212> PRT
<213> Human immunodeficiency virus

<400> 25
Asp Ile Lys Gln Gly Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg
1 5 10 15

Phe Phe Lys Thr
20

<210> 26
<211> 60
<212> DNA
<213> Human immunodeficiency virus

<400> 26
gacataaaac aaggaccaaa agagcccttt agagactatg tagaccggtt ctttaaaacc 60

<210> 27
<211> 20
<212> PRT
<213> Human immunodeficiency virus

<400> 27
Asp Ile Arg Gln Gly Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg
1 5 10 15

Phe Phe Lys Thr
20

<210> 28
<211> 47
<212> PRT
<213> Human immunodeficiency virus

<400> 28
Thr Ile Thr Ile Thr Cys Arg Ile Lys Gln Ile Ile Asn Met Trp Gln
1 5 10 15

Lys Val Gly Arg Ala Met Tyr Ala Pro Pro Ile Ala Gly Asn Leu Thr
20 25 30

Cys Glu Ser Asn Ile Thr Gly Leu Leu Leu Thr Arg Asp Gly Gly
35 40 45

<210> 29
<211> 48
<212> PRT
<213> Human immunodeficiency virus

<400> 29
Ser Ile Ile Thr Leu Pro Cys Arg Ile Lys Gln Ile Ile Asp Met Trp
1 5 10 15

Gln Lys Val Gly Arg Ala Ile Tyr Ala Pro Pro Ile Glu Gly Asn Ile
20 25 30

Thr Cys Ser Ser Ser Ile Thr Gly Leu Leu Leu Ala Arg Asp Gly Gly
35 40 45